

Chapter

1

Choosing Your Laptop PC

Portable computers, generally referred to as *laptops* or *notebooks*, began as a great tool for people who traveled and wanted to bring their computer along. Today, laptops with high-end displays and huge processing power are taking over the desktop, as well.

Although laptop models vary by weight, size, keyboard configuration, and more, they share some common traits. For example, on a laptop, the keyboard, pointing device, and monitor are built-in.

Like their desktop counterparts, laptop computers run an operating system (OS). The most commonly used OS is Windows. Computers that run Windows are generally referred to as *PCs*, which stands for *personal computers*.



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Explore a Laptop

Laptop computers are very similar to their desktop counterparts. Both contain a hard drive and other hardware. Both use an operating system, run software, and save files. And both can be connected to peripheral devices such as printers.

Key differences exist, however. For example, laptops, which are designed for portability, are

much more compact. In addition, whereas desktops require an external keyboard and mouse, these features along with a monitor are built into laptops (although you can plug in a standard keyboard or mouse if desired). Finally, laptops can run on a battery, whereas desktops require an electrical outlet.

Monitor

The monitor on a laptop is typically made of a soft-to-the-touch, and somewhat fragile, liquid crystal display.

Keyboard

Keyboard configurations vary based on the size of the laptop, with larger laptops having a separate number pad and smaller ones embedding number-pad functionality within the regular keys.

Touchpad Pointing Device

Laptops feature a built-in pointing device — usually a touchpad, as shown here. You move your finger over the pad to move the mouse pointer on your screen.



Function Keys

Most laptops have preassigned functions for these aptly named function keys. Typical uses are for muting the speakers or accessing the Internet.

DVD Drive

Most laptops include a DVD drive, although some still feature a CD drive. The location of these drives varies by model.

Battery

A battery usually slots into the bottom of a laptop. This battery needs to be recharged on a regular basis.

Power-Cord Connector

To recharge your battery, you plug in your laptop using a power-cord connector.



Explore Slots and Ports

You can use the various slots and ports built into your laptop to connect peripheral devices to it, such as a printer, a mouse, a keyboard, an extra monitor, headphones, a microphone, a digital camera, and more. Most of these slots and ports are located on the sides or back of the laptop.

Note that in addition to using the slots and ports built into your laptop to connect peripheral devices, you can also connect these devices to ports and slots in a docking station. You can then plug your laptop into the docking station to access the peripheral devices.

USB Port

You can use a universal serial bus (USB) port to connect a wide variety of devices, from a flash drive for data storage to a printer or digital camera. Devices that can be connected via USB are generally plug-and-play — that is, you need not restart your computer to use them after connecting them via a USB cable. And Windows can automatically install many USB devices when you connect them, requiring no additional input from you.

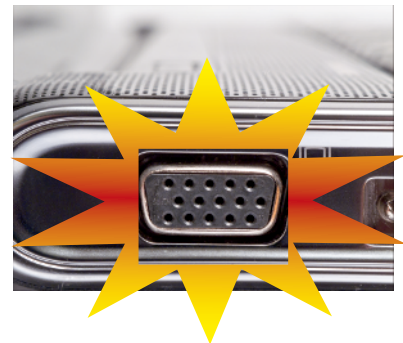


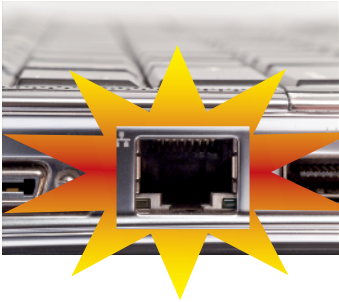
Memory Card Reader

A memory card is a small, removable digital storage device used in many electronic gadgets such as digital cameras, MP3 players, and so on. Many laptops feature memory card readers — small slots into which you can insert a memory card. You can then view the contents of the memory card, and even use the memory card as an external storage device to save data on your laptop.

Monitor Port

Some laptop computers include a monitor port. If you want to connect an external monitor to your laptop — for example, to show a presentation on a larger screen or if you use a dual-monitor system in your workflow — you can connect a standard monitor cable into the laptop's monitor port.





Ethernet Jack

You use an Ethernet jack to connect your computer to a router that controls your local area network (LAN) through a coaxial or fiber-optic cable. You can also use an Ethernet jack to establish a high-speed connection to the Internet. You simply plug the Ethernet cable into the Ethernet jack on your laptop and then connect the other end of the cable to a high-speed modem.

Modem Jack

Although most people use an Ethernet cable or a wireless signal to access the Internet, there may be times when you must use a phone line. In the event you are required to use a phone line to dial up your Internet connection, you can plug a phone cable into the modem jack to pick up a signal.

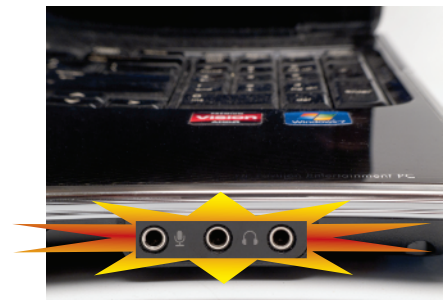


PC Card Slot

The PC card, also called the PCMCIA card (short for Personal Computer Memory Card International Association, the group of industry-leading companies that defined and develop the standard), was originally another type of storage card but ultimately expanded to house other devices such as network cards and modems. Many laptops include slots for PC cards.

Headphone and Microphone Jacks

If you want to use headphones to listen to music from your computer, you plug them into the headphone jack. Alternatively, you can use this jack to plug in computer speakers. You use the microphone jack to plug in a microphone. You might use a microphone, for example, to communicate with others using a video-chat application.



Choose a Monitor

Laptop displays range in size from 5 inches — perfect for portability — to 17 or even 20 inches. These larger monitors are ideal for handling graphics and animations. In addition to varying in size, laptop monitors can also vary in image quality.

Which monitor is right for you depends on how many hours you will spend in front of it and

what functions you need to perform. When choosing a monitor, you should keep both size and image quality in mind.

Note that laptop monitors are notoriously fragile. Avoid scratching them or submitting them to extreme temperatures.

Display Size

If you mainly need to check e-mail or type a few memos on the road, a smaller monitor might be adequate. However, if you spend hours reading reports, studying graphs, and viewing high-end graphics, a larger monitor is best. Of course, monitor size affects portability, with larger monitors best suited for stay-at-home laptops.



Display Quality

Laptop monitors vary widely in quality. When researching laptop monitors, you will hear various terms, such as backlit and reflective, active matrix and passive matrix, and TFT. Generally speaking, TFT, active-matrix, backlit displays are superior. A monitor's screen resolution indicates the number of pixels that form an image on the screen; the higher the numbers are, the crisper the display. Look for a screen resolution of at least 1024×768 pixels — higher if you use graphics-intensive applications.

Tablet PCs

Tablet PCs are a special type of laptop. Most tablet PCs look more like legal pads than laptops. With some tablet PCs, instead of using a keyboard and pointing device to input data, you write directly on the tablet PC's monitor using a stylus — that is, an electromagnetic pen that sends a digital signal through the screen. What you write on the monitor can be converted to regular computer font for improved readability.



Choose the Right Weight

Laptops started out as portable computing devices for people who traveled regularly.

Today, you can find ultraportable laptops that weigh as little as two pounds. These laptops offer a smaller display and keyboard size, but have the advantage of a longer battery life.

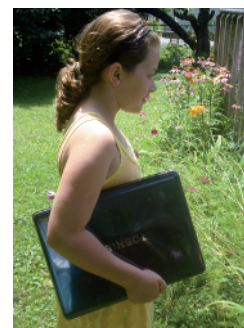
You can also buy laptops that weigh as much as 18 pounds. These larger models often include

multimedia features and larger screen sizes. In fact, these models are so full featured, many people have adopted them for use in lieu of a desktop computer.

Choosing the right weight for your laptop involves weighing portability against performance.

Portability

If you need a laptop for use while on the road, consider a lighter-weight model. Be aware, however, that there can be a trade-off in features and price when you buy a very lightweight laptop. A two-pound laptop may be more expensive, and may be less able to handle larger programs or run at faster speeds. In contrast, a larger portable laptop may offer more speed or features, but it may be difficult to carry on long trips.



Stay-at-Home Laptops

Some people use laptops at home in lieu of a desktop model. Even larger laptops, which boast 17- or even 20-inch screens, take up less space than a computer tower, and plugging external devices into them is easier without having to crawl around on the floor or move a heavy tower. With wireless Internet connections and a built-in keyboard and pointing device, they tend to reduce the clutter of cables that come with standard desktop models. Although weight is less of an issue for stay-at-home laptops, consider whether you might want to carry such a computer from room to room or out of the house before you choose the heaviest model.

Rugged Laptops

Some laptops are marketed for their durability. If you work in an industry such as construction, the military, law enforcement, archeology, or any other industry in which your laptop may be subjected to a harsh physical environment in which heat, humidity, altitude, or depth may be a factor, one of these rugged laptops may be for you. Their keyboards are sealed to prevent water damage, and they can withstand more variation in temperature, as well as the effects of shock, vibration, drops, grease, and fire. They can also function near electromagnetic transmissions, such as from power generators. Not surprisingly, these rugged laptops are somewhat heavier than traditional models.

Determine Memory and Storage Needs

Your computer needs a certain amount of random access memory, or RAM, to run programs and load files. More RAM can also help your computer run faster. Your laptop can read from and write to RAM more quickly than to other types of computer storage.

Your computer also needs to be able to store data. You store data on a hard drive. In addition, you can store data on external storage media, such as CDs, DVDs, flash drives, and external hard drives. You will learn more about these types of external storage media in the next task.

RAM

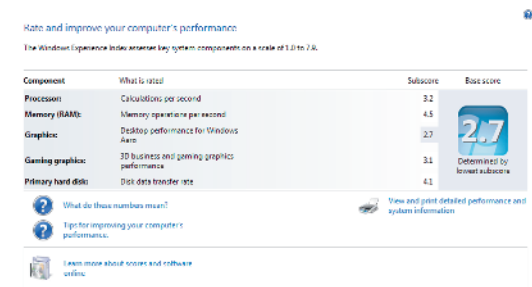
The more random access memory (RAM) your system has, the faster items load on your computer. RAM exists on an integrated circuit memory chip, which is rated by its maximum clock rate (how quickly it can request data to appear), measured in megahertz (MHz), and its memory size, measured in megabytes (MB) or gigabytes (GB). RAM comes in several varieties, including static RAM (SRAM), dynamic RAM (DRAM), synchronous dynamic RAM (SDRAM), and double data rate SDRAM (DDR SDRAM). Note that you may be able to add RAM to your system if it is running too slowly. Doing so involves opening a panel on the bottom of the machine to access the motherboard.

Hard Drive Capacity

Hard drives have a certain capacity for storing data, measured in gigabytes (GB) or, in recent years, terabytes (TB). When you create or save a file on your laptop, the file is saved to your hard drive. You should buy a hard drive with enough capacity to handle your day-to-day data storage needs. Today, a 100GB hard drive is pretty much the minimum standard. The more files you need to store and the more programs you need to run, the larger-capacity hard drive you should get. Hard drives with a faster rotational speed can be useful for power users, enabling quicker access to files.

The Windows Experience Index

Windows 7 supports the use of the Windows Experience Index, which evaluates components on a PC, including the memory, to determine how well that PC will perform running Windows 7. This evaluation is expressed in a measurement called a *base score*. The base score is derived from the lowest of the subscores — that is, the scores of each component evaluated. Scores range from 1.0 to 7.9.

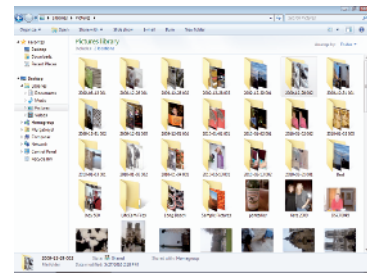


Basic Requirements

Windows 7 requires a Windows Experience Index rating of 1.0 to operate — that is, 1GB of system memory (RAM) for the 32-bit version of the operating system and 2GB of system memory (RAM) for the 64-bit version. Windows 7 also requires 20GB of available space on the hard drive to function. In reality, however, minimum requirements for operating systems are not adequate for a smooth computing experience. If you are purchasing a new laptop, you should opt for one with additional RAM and hard-drive space; how much more RAM and hard-drive space you need depends on how you plan to use your laptop.

Everyday Use

If you plan to use your laptop on a day-to-day basis, and if it fits in your budget, you should look for a PC with a Windows Experience Index rating of at least 2.0, and preferably 3.0. Bumping up your RAM to 3GB helps ensure your PC does not get bogged down. In addition, you may want to opt for a larger hard drive — say, 200GB — especially if you want to store a significant number of photos, songs, or videos on your PC.



Power Users

You may need to run several programs at once (called *multitasking*). For example, you may want to check your e-mail while running a PowerPoint presentation and opening a Word document. In this case, opt for a laptop with a Windows Experience Index rating of at least 3.0, and preferably 4.0. In addition, you may want more memory — 4GB should do the trick. And you will almost certainly want a larger hard drive.

Graphics and Gaming

For the graphics professional or hard-core gamer, a Windows Experience Index rating of at least 5.0 ensures that any high-end games or graphics applications run without a hitch. And again, you will want yet more memory and an even larger hard drive than a power user would require — 5GB of RAM and a 500GB hard drive should suffice.



Understand Drives and Data Storage

Laptops store data on an internal hard drive — a spinning hard disk inside the laptop — via magnetic recording. An arm with a magnetic head moves over the disk to read or write data on the disk as it spins. Data can also be erased, although the magnetic data pattern may remain on the drive after you have erased it.

Most laptops also have a disc drive. Depending on the type of drive, you can insert a CD, DVD, and/or Blu-ray disc into it to store data on the disc. Other data-storage options include Flash drives and portable external hard drives.

How Data Is Stored

Data is stored in files as a series of bytes in a sector on your hard drive. Each sector on the drive can contain a certain number of bytes. When you access data, whether by opening a piece of software or opening a file, the read/write heads move across the hard drive, looking for the required bytes. These bytes may be located in various sectors of the drive. Because bytes in files are spread across multiple sectors, those files are said to be *fragmented*; fragmented files take longer to load than files whose bytes are stored in a single segment.

Partitions

You can create partitions on a hard drive that essentially break it up into two or more hard drives. You may do this to run different operating systems on the same computer. You may also create a partition to foster the appearance of having multiple hard drives for file-management purposes or to accommodate multiple users. Creating additional partitions also enables you to separate your data from your operating system; that way, in the event your operating system is damaged, your data remains safe. To partition a hard drive in Windows 7, there must be either unallocated disk space or free space on the hard drive.

Using the Disc Drive

As mentioned, most laptops include a disc drive, into which you can insert various storage media. These storage media include compact discs (CDs), digital versatile discs (DVDs), and Blu-ray discs. Depending on your disc drive's setup, you may be able to read data on and write data to all three of these types of storage media.



Storing Data on CD

Nearly all disc drives support the use of compact discs, or CDs — hard plastic disks on which you can store data, music, or images. CDs can typically store up to 700MB of data. To read from or write to a CD, your laptop must have a CD drive with the appropriate support (read, write, or read/write).



Storing Data on DVD

DVDs are similar to CDs, but with more storage capacity. A single-layer DVD can store 4.7GB of data, whereas a dual-layer DVD can store twice that. DVDs come in several formats, including DVD+, DVD-, and DVD+/- . DVDs also come in readable, writeable, and read/write format. Your laptop's disc drive must explicitly support a DVD format for you to be able to use that type of DVD.

Storing Data on Blu-ray

The name Blu-ray stems from the blue-violet laser used to read and write to this type of disc. A single-layer Blu-ray disc can store 25GB of data, more than five times the storage capacity of a standard DVD disc, and a double-layer disc can store twice that. This storage format, designed to enable the recording, playback, and rewriting of high-definition video, is expected to supersede the DVD format.



Flash Drive

A flash drive, also referred to as a USB stick or pen drive, is smaller than a pack of gum but can hold a huge amount of data. Plugging a flash drive into a USB port is like adding a second hard drive. Flash drives come with differing amounts of storage space, from 64MB to 256GB.

External Hard Drive

If you need to store large amounts of data — for example, to back up your system — you can buy an external hard drive. External hard drives have storage capacities of many gigabytes or even terabytes. An external hard drive can be connected to your laptop via its FireWire or USB port.



Select a Microprocessor

Choosing a microprocessor, often referred to as a *processor*, is an important part of deciding which laptop is right for you. The type of microprocessor found in a laptop can make a big difference in its performance.

A microprocessor incorporates most or all of the functions of a computer's central processing unit, or CPU. The microprocessor is the brain of

a computer, enabling it to perform calculations and process data.

The various companies that manufacture microprocessors are constantly working to improve them. Newer microprocessors offer more processing power, handle multiple tasks concurrently, generate less heat, and require less power to operate.

What a Microprocessor Does

A microprocessor acts as the brain of the computer, handling data, performing calculations, carrying out stored instructions, and so on. Microprocessors, which are integrated circuits composed of millions of transistors, can perform many instructions per second, such as mathematical equations, calibrations, data storage, display updates, and so on. A microprocessor is housed on a tiny silicon wafer base, or chip, where some or all of the functions of a computer's central processing unit (CPU) are integrated.

Microprocessor Design

A microprocessor incorporates functions of the CPU onto an integrated circuit, also called a *chip*. An integrated circuit is a tiny electronic circuit composed of millions of transistors situated on a silicon wafer. This circuit consists mainly of semiconductor devices — that is, components that make use of the electronic properties of various semiconductor materials (primarily silicon).



Brands of Microprocessors

The two top manufacturers of microprocessors are Intel Corporation and AMD Inc. Intel, founded in 1968, produced the first microprocessor in 1971 — a four-bit processor called the Intel 4004. AMD, short for Advanced Micro Devices, launched in 1969 as a producer of logic chips. In addition to manufacturing microprocessors, both companies also produce motherboard chipsets, network interface controllers and integrated circuits, flash memory, graphic chips, and other devices for computing and communications. Chips are constantly being improved to include more processing power, handle more tasks concurrently, and generate less heat.

The x86 ISA

Both Intel and AMD produce processors based on the x86 instruction set architecture. The instruction set architecture, sometimes called simply the *instruction set* or the *ISA*, is the portion of the computer architecture that pertains to programming. It includes the *opcodes*, or the machine language that specifies the commands used by a particular processor. x86 refers to a family of ISAs spawned by the Intel 8086 chip, launched in 1978, and to the early successors of that chip, which also had names ending in 86.

Clock Rate

The higher the clock rate, the faster your computer can operate. You will often see a clock rate, also known as clock speed, expressed in gigahertz, to reflect how quickly the processor in your laptop can complete a clock cycle, or tick. A clock cycle is the smallest unit of time a device recognizes, although a microprocessor may execute several instructions in a single clock cycle. It can be useful to compare clock rates of processors in the same family; the faster the clock rate, the more instructions the microprocessor can execute per second. Using clock rates to compare processors from different families can be misleading, however, because the amount of work that different microprocessors can do in a single clock cycle varies.

Dual-Core Processors

Older laptops featured single-core processors. That is, the silicon wafer, or chip, on which the processor was housed contained only a single processor. In time, however, computer requirements exceeded the capabilities of these processors. That led to the development of dual-core processors — essentially, two processors on a single silicon wafer, or chip. Just as two heads are better than one, dual-core processors enable computers to more efficiently start and run several operations at once, at fast processing speeds (measured in GHz), and with lower power usage. Recent years have seen the development of quad-core processors, which are even more efficient than their dual-core counterparts.

Moore's Law

Moore's law, named for Intel co-founder Gordon Moore and coined in 1970 by Caltech professor Carver Mead, describes a long-term trend in computing in which the number of transistors that can be placed cheaply on an integrated circuit has roughly doubled every two years. Gordon Moore observed this trend in a 1965 paper, in which he noted that the number of components on integrated circuits had doubled each year since 1958, the year in which the integrated circuit was invented. Moore went on to posit that this trend would continue "for at least 10 years." The result of this trend, which is in fact expected to continue until at least 2015, has been the increased use and demand for digital electronic devices worldwide.

Choose a Microprocessor

The microprocessor you choose depends on how you plan to use your laptop. For example, if you are a power user or you plan to use your laptops to play games, then you will want a more robust microprocessor. In addition, if you plan to travel frequently, battery life is a consideration. In that case, you might opt for a dual-core processor designed for mobile computing, such as the AMD Turion 64 X2 or the Intel Core Duo processor. These use less power while still providing the advantages of a dual processor. Whichever microprocessor you choose, look for a clock rate of at least 1 GHz.

Review Graphics Capabilities

The graphics card is a circuit board inside your laptop that controls what appears on your laptop's monitor. The graphics card is also called the video card, video adapter, display adapter, graphics-accelerator card, or graphics processing unit. The graphics card is particularly important when playing games or running animations.

Laptops that can handle the graphics and animations that appear in many computer games tend to have powerful graphics cards along with large screens with a high resolution, a lot of memory, and fast processors. These come with a high price tag, but for a dedicated gamer or multimedia designer, they may be worth it.

Graphics Cards

Graphics cards contain a graphics processing unit (a GPU) with a specific speed and amount of memory. For most users, the graphics card that comes installed on a laptop is sufficient. For users who intend to use their laptop for graphics-rich applications such as design or animation software or games, a graphics card with more speed and memory may be required.



Considerations

If you are a hard-core gamer or plan to use your laptop to handle 3-D graphic work, a top-of-the-line graphics card is a must. However, it is not necessary to have a high-end graphics card on a laptop that will be used primarily for such tasks as checking your e-mail or using a word-processing program. Note that your graphics card must be a good match for your CPU. A very powerful graphics card with a slower or older CPU would be a waste. Also, be aware that not all graphics cards work on all computers. Finally, be sure to check the frame rate — that is, the frequency at which the card produces unique consecutive images, called *frames* — because lower rates can slow down video and animations.

Brands of Graphics Cards

Three manufacturers of graphics cards dominate the market: Intel, AMD, and NVIDIA. Intel owns the low-end category, offering a line of graphics cards integrated into the manufacturer's motherboard chipsets. Although this can reduce cost, power consumption, and noise, performance takes a hit because both the graphics card and the CPU share use of the laptop's main memory. If you plan to use your laptop primarily to check e-mail or work with a word-processing program, this type of graphics card should be adequate. If, however, you plan to use your laptop for gaming or working with 3-D graphics, an AMD and NVIDIA graphics card may be a better choice. These manufacturers offer graphics cards that span from the low end to the very high end.

Explore Wireless Capabilities

With wireless technology, you can use your laptop to connect to the Internet using a wireless network — without cable connections or a phone line. These wireless networks exist in many locations, including hotels, airports, libraries, schools, businesses, cafes, and more. If you plan to take your laptop on the road, the ability to connect to wireless networks

while traveling, or at your destination, can be very important.

When you buy a laptop, you should make sure that it includes the hardware components necessary to use a wireless network. You will quickly find that a laptop without this capability is much less useful than one that has it!

How Wireless Works

A special piece of equipment called a *wireless router* broadcasts a radio-based signal, which is received by computers in the router's vicinity (assuming those computers have the appropriate hardware installed). Specifically, computers need to have a wireless card installed to access the wireless signal. Computers with the necessary hardware can use the signal for two-way communication. The transmission speed varies depending on the quality of the connection and the quality of the wireless card installed in the laptop.

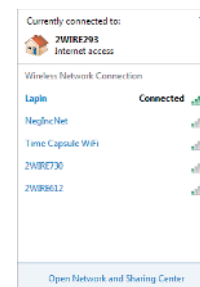


Wireless Protocols

There are various wireless technology protocols. These include Bluetooth and WiFi, also referred to as 802.11. This technology enables you to connect wirelessly to the Internet. Within the WiFi protocol are several versions, including 802.11a, which operates at 54 megabits per second (Mbps) and has an indoor range of 115 feet; 802.11b, which operates at 11 Mbps but has an indoor range of 125 feet; and 802.11g, which operates at 54 Mbps with an indoor range of 125 feet. In addition, the most recent version, 802.11n, operates at 150 Mbps with an indoor range of 250 feet. 802.11n offers significant increases in data throughput and link range, without requiring additional bandwidth or transmission power.

Finding Wireless Networks

Many restaurants, hotels, airports, libraries, bookstores, and other public places offer wireless hot spots — that is, areas where you can use your laptop to connect to a wireless router and access the Internet for free or for a fee. In addition, you can subscribe to various wireless services from popular providers such as T-Mobile, Verizon, and so on to pick up their signal when you travel.



Choose the Best Battery

When you take your laptop on the road, it needs to carry its power supply with it — specifically, a rechargeable battery.

The amount of time you can run your laptop on a charged battery is called the *battery life*. Battery life, which varies from laptop to laptop, represents the number of hours your laptop can

operate on a fully charged battery before again being recharged.

Laptop batteries come in different types. Learning about these different types before you buy can help you purchase a laptop that will serve you well for years to come.

Types of Batteries

Early laptops featured nickel-cadmium (NiCd) batteries, the first rechargeable batteries manufactured for laptops. NiCd batteries were heavy, could not hold much power, and could be recharged only a limited number of times. In addition, NiCd batteries could not be left on the charger after they had reached full charge and could not be recharged until they were completely dead. For these reasons, laptop manufacturers have since abandoned NiCd batteries. Newer laptop batteries address these issues in addition to being more efficient. These include nickel-metal hydride (NiMH) batteries and the more recent, lighter, more efficient, and more expensive lithium-ion (LiON) batteries.

Battery Life

Laptop batteries offer a certain number of hours of battery life — that is the period during which the battery is capable of operating at or above a given level after it has been fully charged. When fully charged, the average laptop battery offers anywhere from two to four hours of battery life. This number can vary, however, depending on the type of battery your laptop has, how the laptop is being used, and what types of hardware components the laptop has. Batteries with higher milliamperes per hour (MAH) have a longer battery life.

What Affects Battery Life?

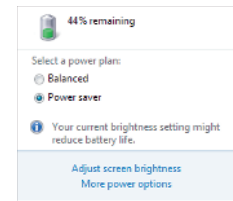
Various issues affect the life of a battery. One is whether the laptop is being used or is on standby mode. Another is how long the laptop takes to power down or power up. In addition, having a larger monitor with higher resolution or one used at a higher brightness setting can drain a battery faster. And of course, battery life depends on the type of battery you have. Fortunately, laptop PCs have several tools for prolonging battery life, from dimming the screen display to automatically switching to a standby mode when not in use for a prescribed period of time.

Sleep Mode

One way to stretch your battery life is to put your laptop into Sleep mode when you are not using it. Sleep mode turns off the screen, hard drive, and internal fan, and generally uses less energy. When your laptop comes out of Sleep mode, whatever you were doing when the laptop went into Sleep mode is still open and available for you to return to work. In addition to using Sleep mode, you can use Hibernate mode. In Hibernate mode, the laptop is completely powered down; when you restart the laptop, whatever you were doing when the laptop went into Hibernate mode again appears on the Windows 7 desktop.

Gauging Your Charge

Your laptop keeps you informed of your battery charge in a couple of ways. First, the Windows 7 taskbar displays a battery meter that shows you how much charge you have left. You can also set a low-battery alarm to alert you when power is just about to run out. To learn how to set a low-battery alarm, see Chapter 2.



Charging Your Battery

You will need to charge your laptop battery on a regular basis. You do this by plugging your laptop's power cord into an electrical outlet. Getting in the habit of keeping your battery charged is essential. Unless your laptop has an older battery that requires you to wait until the battery is practically drained to recharge it, your motto should be, "Charge often!"

Run on AC Power

If you are using your laptop at your home or office, you can plug its power adapter into an electrical outlet and run off of electricity all the time. This has the added benefit of recharging your battery and keeping it fully charged. If you lose your adapter, damage it, or it simply stops working, you can buy a replacement. Note, though, that you must find an adapter designed to work with your make and model of laptop.

Add a Second Battery

The easiest way to stretch the time you have to work on your laptop with a battery is to double your battery power by carrying a spare. When the first one runs low, simply swap them out, inserting your spare battery to keep using your laptop. Some laptops are designed with quick-swapping in mind, enabling you to simply eject the spent battery and quickly insert the spare, without even shutting down your system. Other laptops require that you power down your computer first. Note that the spare battery must fit your laptop model; be sure to get the right model battery, or it will not work.

Battery Life Expectancy

Different types of batteries have different life expectancies. Although lithium-ion batteries have the longest life spans — about 500 charges — even they eventually wear down. As batteries wear down, they are no longer able to hold a charge for as long as when they were new, or they may fail to fully charge. If you find yourself in need of a new battery, contact your laptop's manufacturer to purchase one. When purchasing a new battery, beware of generics. Always buy a manufacturer, or manufacturer approved battery. Be aware that new batteries can be quite expensive.